

REMARKS

Claims 1-17 are pending in the application. Claims 1, 4-5, 8-9 and 12-17 have been rejected under 35 U.S.C. §102. Claims 2-3, 6-7 and 10-11 have been rejected under 35 U.S.C. §103. The rejections are respectfully traversed.

Regarding Rejections under 35 U.S.C. § 102(e)

Claims 1, 4-5, 8-9 and 12-13 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Rabenko et al. (U.S. Patent No. 6,765,931).

The Rabenko reference discloses data relay mode in which all data signals between a call modem and an answer modem are transmitted over the packet based network. The system discussed by Rabenko includes a demodulation system and a remodulation system. The demodulation system includes a data pump receiver that demodulates signals received from the call modem and a packetization engine that packetizes the demodulated data signals to be transmitted over the packet based network. The remodulation system includes a depacketizing engine that depacketizes packets of data signals received over the packet based network and data pump transmitter that modulates the data signals. Rabenko states that “[t]his approach results in considerable bandwidth savings since only the underlying demodulated data signals are transmitted across the packet based network.” (See Col. 99, line 40 - Col. 100, line 55; and FIG. 49).

As is well-known in the art of modem relays, in order to maintain a modem connection that is, keep the modem connection alive, modem data must be continuously transmitted between the modems regardless of the amount of actual user data traffic being generated. This results in idle data being transmitted over an IP network which consumes IP network bandwidth.

The Applicants’ invention is directed to method and apparatus for reducing Internet bandwidth for a modem relay by not forwarding data packets that would have a payload of idle

data over the IP packet network between Internet nodes while maintaining the connection between the modems.

An embodiment of Applicants' invention is described in connection with FIG. 2 of the application as originally filed:

The deframer module 234 includes an idle detect module 274. The framer module 232 includes an idle generate module 272. The idle detect module 274 detects idle data in the PCM stream. Idle data can be 'FF' or '7E' dependent on the negotiated error correction protocol. The idle data received by the deframer 234 is not forwarded over the VoIP connection. Instead, the deframer 234 drops the idle data.

The framer 232 detects an idle period when no RTP packets are being received. In order to maintain the modem connection (keep the modem connection alive), the idle generate module 272 in the framer 232 generates 'idle flags' to be transmitted over the PCM connection.
(See page 8, line 28 to page 9, line 7)

In accordance with the invention, a first modem is coupled to one Internet node and a second modem is coupled to another Internet node. Upon detecting no data packets received from the other Internet node to transmit to the first modem, the Internet node regenerates (e.g., idle generate module 272; FIG. 2) the idle data that would have been received in the payload of the non-received data packets to transmit to the first modem. The regenerated idle data is used to maintain the connection between the first modem and the second modem. Upon detecting idle data received from the first modem to forward to the other Internet node (e.g., idle detect module 274; FIG. 2), the Internet node drops the detected idle data, that is, data packets that would have a payload of "idle data" are not transmitted over the packet network.

In contrast to Applicants' claimed invention, Rabenko merely discusses a data relay mode in which a local modem connection is established on each end of the packet network and data signals originating in a call modem are relayed across the packet network to an answer modem. Rabenko does not detect idle data for the purpose of not sending such idle data over a packet network. Indeed, Rabenko's statement regarding "considerable bandwidth savings since only the underlying demodulated data signals are transmitted across the packet based network" (col. 99, lines 65-67) makes no distinction based on the detection of idle data.

In order to anticipate a claim, a reference must teach each and every element or limitation of the claim. First, Rabenko does not teach “upon detecting idle data received from the first modem over a GSTN network to forward to the other Internet node over the IP network in the payload of a data packet, dropping the detected idle data by not forwarding the data packet over the IP network” as recited in claim 1. In particular, the Examiner has not indicated a specific teaching in Rabenko that relates to dropping idle data received from a modem by not transmitting or forwarding such data in a data packet over an IP network. The Examiner cites one particular section of Rabenko that discusses the physical interface portion of an Ethernet MAC (FIG. 8), referring to replacement of idle codes with zeros, detection of invalid codes and “conditions which can be used to improperly terminate the data stream” (col. 21, lines 20-27). The Examiner also states that Rabenko “teaches zeroing out the idle data and terminating the data stream” (see page 3; paragraph 8 of the instant Final Office Action). The claimed invention does not recite either function. The function of replacing idle codes with zeros, as described in Rabenko, is not the same as or similar to dropping detected idle data. Detection of invalid codes is inapplicable to the disposition of claim 1, as invalid codes are not even mentioned in the claim language. Termination of a data stream, as mentioned in Rabenko, whether proper or improper, is not an element of claim 1. Dropping idle data is not terminating a data stream. Indeed, termination of a data stream teaches away from maintaining a connection between modems, an aspect of the invention.

The Examiner also refers to a section of Rabenko that discusses “when to perform frame deletes” (col. 72, lines 1-20). This section of Rabenko is in the context of a voice synchronizer that manages the contents of a queue that contains voice packets. The “frame deletes” are used to decrease the size of the voice queue based on considerations of voice synchronization and delay. Such “frame deletes” apparently make no distinction on the content of the voice packets, such as whether the voice packets contain idle data. Thus, the frame delete functionality of Rabenko bears no relation to dropping detected idle data in the context of modem relay.

Second, Rabenko does not teach “upon detecting no data packets received from the other Internet node over an IP network to transmit to the first modem, regenerating idle data at the Internet node to transmit to the first modem, the regenerated idle data used to maintain a connection between the first modem and the second modem” as recited in claim 1. In particular, the Examiner has not indicated a specific teaching in Rabenko that relates to regenerating idle data to transmit to a first modem in order to maintain a connection between first and second modems, after detecting that no data packets have been received from the other Internet node over an IP network to transmit to the first modem. The Examiner cites particular sections of Rabenko that discuss timing synchronization, acquisition and recovery (col. 7, lines 40-47); timing regeneration circuit (col. 18, lines 30-41); “regeneration of the desired resampled output” in the context of voice processing (col. 30, lines 57-60; FIG. 17); call signaling (col. 37, lines 33-42); and data relay mode generally (col. 99, lines 53-58). However, the cited sections of Rabenko simply fail to teach regeneration of idle data to transmit to a first modem in relation to having detected no packets received from the other Internet node.

The foregoing arguments apply to Claims 5, 9 and 13, which recite similar limitations. Claims 4, 8 and 12-17 depend from respective base claims 1, 5 and 13 and are allowable for the same reasons. Reconsideration of the rejection under § 102 is respectfully requested.

Regarding Rejections under 35 U.S.C. 103(a)

Claims 2-3, 6-7 and 10-11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Rabenko and Ho et al. (U.S. Patent Application No. 2003/0133461) in view of “Official Notice”.

The Examiner has taken Official Notice that allocating idle data to memory is well known. The Applicants respectfully traverse the Examiner’s assertion of Official Notice. The Applicants’ disclosed invention is not directed to allocating idle data to memory. Instead, the Applicants’ method implemented in an Internet Node reduces Internet bandwidth used for VoIP modem relay by dropping detected idle data by not forwarding the data packet over the IP

network. The idle data may be assigned a value of 'FF' or '7E' as claimed in claims 2-3, 6-7, and 10-11.

The Ho reference is directed to data transfer over an IP network. Instead of storing the received idle data in the payload of the data packet, a circuit header in each IP packet includes an idle flag that is set in the packet to indicate idle data was received. Thus, the receiver receives a packet that includes an indication of the idle data instead of the actual idle data.

To establish a prima facie case for obviousness under 35 U.S.C. § 103(a), (1) there must be some suggestion or motivation to combine reference teachings; (2) there must be a reasonable expectation of success; (3) the references when combined must teach or suggest all the claim limitations. For the reasons discussed below, it is respectfully submitted that the Examiner has not established a prima facie case under 35 U.S.C. § 103(a) for Claims 2-3, 6-7 and 10-11, and that therefore, Claims 2-3, 6-7 and 10-11 are allowable.

The Ho reference merely discusses transmitting an indication of idle data in a packet instead of transmitting the idle data in the payload of a packet. Such transmission of an indication of idle data instead of the actual idle data is sufficient for the purposes of the Ho system. However, a modem relay connection, which is the context of the present invention, cannot be maintained if the idle data that is used to maintain the modem connection is not received by each modem.

Rabenko is directed to a modem relay and Ho is directed to emulation of constant bit rate over an IP network. One skilled in the art of modem relay would not look to emulation of constant bit rate over an IP network in order to reduce bandwidth over the packet network in a modem relay. Even if the references were combined, the combination does not teach or suggest Applicants' claimed invention of Claims 2-3, 6-7 and 10-11. The combination at best is a modem relay with a packet network over which data packets are transmitted with an indication of idle data instead of the idle data.

Reconsideration of the rejection under § 103 is respectfully requested.

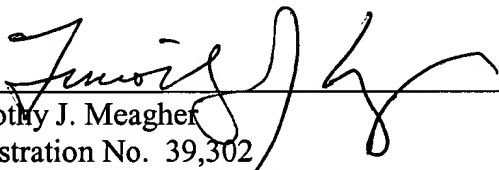
Accordingly, the present invention as now claimed is believed to be patentably non-obvious over the cited art. In view of the foregoing, removal of the rejections under 35 U.S.C. § 102(e) and 35 U.S.C. § 103(a) and acceptance of Claims 1-17 are respectfully requested.

CONCLUSION

In view of the above remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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